

We claim:

1. A watercraft comprising a hull having a fore end, an aft end, and a longitudinal axis extending between the fore end and the aft end, the hull comprising:

5 a displacement body; and
two downwardly extending outer skirts, each of the outer skirts being located on either side of the displacement body and connected thereto by a planing wing having a wing channel, wherein the ceilings of the wing channels are above the static waterline in the fore end and extend downward below the static waterline in the aft end.

10 2. The watercraft of claim 1, wherein the outer surfaces of the outer skirts are substantially perpendicular with respect to the static waterline.

3. The watercraft of claim 1, wherein the inner surfaces of the outer skirts are generally arcuate.

4. The watercraft of claim 1, wherein the outer skirts are tapered.

15 5. The watercraft of claim 1, wherein the cross-sectional surface of each wing channel is concave with respect to the static waterline.

6. The watercraft of claim 5, wherein the cross-sectional surface of each wing channel at the fore end is generally arcuate.

20 7. The watercraft of claim 6, wherein the curvature of the wing channel cross-sectional surface is greater at the fore end than at the aft end.

8. The watercraft of claim 1, wherein the cross-sectional surface of each wing channel is generally arcuate at the fore end and generally linear at the aft end.

25 9. The watercraft of claim 1, wherein the hull further comprises one or more serrations located on the surface of the wing channels and extending downward below the static waterline.

10. The watercraft of claim 1, wherein the hull further comprises one or more serrations located on the surface of the displacement body and extending downward below the static waterline.

30 11. The watercraft of claim 1, wherein upon forward movement of the watercraft through a body of water the waves generated by the displacement body and the

skirts are substantially directed into the wing channels, resulting in substantial wave suppression.

12. The watercraft of claim 11, wherein the watercraft comprises a mechanical propulsion system.

13. The watercraft of claim 12, wherein the mechanical propulsion system is an internal combustion system, an electrical system, a compressed air system, or a combination thereof.

14. The watercraft of claim 12, wherein the mechanical propulsion system comprises one or more propellers.

15. The watercraft of claim 14, wherein at least one propeller is located on the displacement body.

16. The watercraft of claim 14 having two propellers, wherein each of the two propellers is located in a wing channel.

17. The watercraft of claim 1, wherein the hull further comprises two or more downwardly extending inner skirts attached to either side of the displacement body, wherein the outer skirts flank the inner skirts.

18. The watercraft of claim 1, wherein the watercraft is a sailboat.

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